

PATENT  
10/635,829REMARKS

1. Claims 1, 6, 11, 13, 16, 17 and 28 stand rejected under 35 U.S.C. §102 as anticipated by White *et al.* USPN 6,247,633 (White). Claims 16 and 17 were previously canceled. Claim 1 has been amended and claims 6, 11, 13 and 28 are dependent on claim 1. New claims 33-35 have been added.

The Examiner has said that White teaches a method of welding comprising positioning an adhesive sealant between surfaces and friction stir welding which generates heat to cure the sealant, forming lap welds. The Examiner further said that the welded structure formed by friction stir welding comprises a first and second member with a fay surface sealant therebetween.

Applicant respectfully traverses these rejections because White does not teach the use of a sealant.

As noted in MPEP §706.02 IV, for a rejection by anticipation under 35 USC 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. That is, any feature not directly taught must be inherently present.

Independent claim 1, as now amended, calls for friction stir welding through a monomer to form a sealant adjacent the welded joint between the surfaces, for preventing corrosion of the welded joint.

The term "sealant" is never used in White. White does not teach the use of a material having corrosion protection property or sealing properties and teaches only the use of an adhesive layer between the surfaces to be welded. In particular, White teaches, at column 4, lines 17-29, that

- an adhesive layer may be incorporated at the interface between surfaces to be welded together by friction stir welding
- the adhesive will be broken up and distributed in the weld channel as harmless particles
- the adhesive can be self curing or can be cured later after welding

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- the resulting adhesive/friction stir welded structure will have a high shear strength
- the adhesive assisted assisted frame will have strong, stiff joints with low distortion.

In accordance with MPEP § 707.07(f) that the Examiner, if this rejection is maintained, explain with specificity what in White anticipates the sealant for preventing corrosion of the welded joint claimed in claim 1 as amended. An adhesive is not inherently a sealant

The common meaning of the term adhesive, according to the online Encarta dictionary, is a substance used to stick things together while the common meaning of the term sealant is a substance used to seal something, e.g. by filling gaps or making a surface non-porous. These definitions are consistent with the teachings of the White and of the present invention.

In White, the adhesive layer is used to provide the welded structure with a high shear strength to form a frame with strong, stiff joints. See col. 4, lines 17-29, as noted above.

In the present invention, the sealant is used to prevent or reduce corrosion in large part by reducing moisture which may be trapped between the fay surfaces and/or brought in by capillary action. See par. 0004, page 1. In addition, par. 14 provides:

"When cured, sealant layer 24 should provide corrosion resistance for the fay surfaces of the joint by, for example, resisting the intrusion of moisture by capillary action. A particularly useful fay surface sealant material for sealant layer 24, is formed by the application of a layer which when cured forms a fluoroelastomeric polymer to create a protective corrosion shield between the adjacent fay surfaces 26 and 28 of support member 14 and surface 12, respectively."

In order to sustain a rejection under 35 USC 102 of claim 1, the Examiner must therefore show that the properties of the claimed sealant are inherently taught by the adhesive layer of White. The Examiner has not done so.

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The sealing properties of a sealant are not an inherent property of adhesive layers. It is important to note that the most commonly known adhesive, a mixture of flour and water used by children, does not have sealing properties and is clearly dissolvable in water.

The common adhesive cyanoacrylate is another example of an adhesive that would not serve as a sealant in most applications in which surfaces were bonded by friction stir welding because it would tend to crack and provide a path for the intrusion of moisture.

It should be noted that some materials may provide both adhesive and sealant characteristics, such as the adhesive monomer claimed in claim 6.

In short, some materials may have adhesive properties, some materials with adhesive properties may also be sealants. However, sealant properties are not inherent in adhesives (e.g. water soluble adhesives) and White's teachings of the use of an adhesive to add shear strength to a friction stir welded frame do not anticipate the invention as claimed in claim 1, and new independent claim 33, which calls for the use of a monomer cured by friction stir welding to form a corrosion barrier sealant.

2. Claims 9, 14 and 15 stand rejected under 35 U.S.C. §103(a) as obvious over White in view of Mainwairing *et. al.* USPN 6,779,657 (Mainwairing).

The Examiner has said that White teaches friction stir welding of an adhesive sealant positioned between surfaces. Applicant respectfully traverses this rejection, because as noted above White teaches the use of an adhesive, not a sealant. Applicant repeats his request made above for the Examiner to point out how White's teaching of the use of an adhesive anticipates the use of a sealant.

Claims 9, 14 and 15 are dependent on claim 1 and nothing in White teaches or suggests the use of a sealant as claimed in claim 1.

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The Examiner has also said that Mainwairing teaches a method of welding employing a monomer adhesive between surfaces. The Examiner has taken the position that it would have been obvious to a one of ordinary skill in the art to employ a flouroelastomeric material as an adhesive to increase strength and corrosion resistance. Applicant respectfully traverses this rejection.

Mainwairing, however, does not teach the use of a method of welding employing a monomer adhesive between surfaces to form a sealant. In particular, Mainwairing teaches providing an applicator for sealing a polymerizable monomeric adhesive material in a welded compartment to protect the adhesive material from premature polymerization. Mainwairing can be said to teach against the present invention by teaching weld to prevent polymerization of an adhesive while the present invention teaches the use of a sealant to protect the weld.

A person of skill in the art of friction stir welding would not look to art of sealing a polymerizable adhesive in a container to solve the problem of protecting the weld from corrosion. Further, combining White with Mainwairing would not render obvious the invention as claimed because nothing in White teaches the use of a sealant layer to protect the weld and Mainwairing teaches the use of a different type of weld to protect the unpolymerized adhesive. Nothing in Mainwairing or White teaches any motivation for combining them in a way which would render obvious the present invention as now claimed.

3. Claims 4, 5, 8 and 12 stand objected to as dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base and any intervening claims.

Claims 4, 8 and 12 have been amended to include all the limitations of the base claim, claim 1. Claims 4, 8 and 12, having been amended as required in the Office Action, stand allowed and claim 5, which is directly dependent on claim 4, is therefore no longer dependent on a rejected base claim and also stands allowable.

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Claims 4, 8 and 12 have been rewritten as new claims 29, 31 and to include all the limitations of the base claim, claim 1 and intervening claim 28. Claims 29, 31 and 32, having been amended as required in the Office Action, stand allowed. Claim 5 has been rewritten as claim 30, which is directly dependent on claim 29, is therefore no longer dependent on a rejected base claim and also stands allowable.

4. Applicant respectfully requests that the rejections be reconsidered in light of the amendments and arguments made herein and that this application be passed to issue. If the rejections under 35 USC § 102 are repeated, Applicant respectfully requests that the Examiner an explicit statement regarding the Examiner's source for any holding that White teaches the use of a monomer to form a corrosion barrier sealant as claimed.

Respectfully Submitted,

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